

FIG. 1

PO#	RecvTime	City	Quantity	ShipTime	DeliveryTime	ProcessState
...	...	...	...	...	...	...
123	8:00am	Seattle	150	8:24am	12:45pm	Delivered
124	8:30am	Seattle	234	8:45am	1:20pm	Delivered
125	8:35am	Redmond	87	9:05am	2:30pm	Delivered
126	8:45am	Seattle	450	9:20am	3:10pm	Delivered
127	8:55am	Redmond	200	9:30am	<NULL>	Shipped
128	8:57am	Seattle	340	9:20am	3:05pm	Delivered
129	9:12am	Seattle	120	9:45am	<NULL>	Shipped
130	9:30am	Redmond	25	10:15am	<NULL>	Shipped
131	9:45am	Seattle	250	10:35am	<NULL>	Shipped
132	10:00am	Redmond	100	<NULL>	<NULL>	InProcess
133	10:15am	Seattle	230	<NULL>	<NULL>	InProcess
134	10:25am	Redmond	45	<NULL>	<NULL>	InProcess
...	...	...	...	...	...	...

**FIG. 2**

City	ProcessState	Quantity	Count
Redmond	Delivered	87	1
Redmond	InProcess	145	2
Redmond	Shipped	225	2
Seattle	Delivered	1174	4
Seattle	InProcess	230	1
Seattle	Shipped	370	2

**FIG. 3**

New Purchase Order #135  
for 30 containers from **Redmond** is received

City	ProcessState	Quantity	Count
Redmond	Delivered	87	1
Redmond	InProcess	145	2
Redmond	Shipped	225	2
Seattle	Delivered	1174	4
Seattle	InProcess	230	1
Seattle	Shipped	370	2

+30

+1

New PO#135

FIG. 4

Purchase Order #135 is Shipped

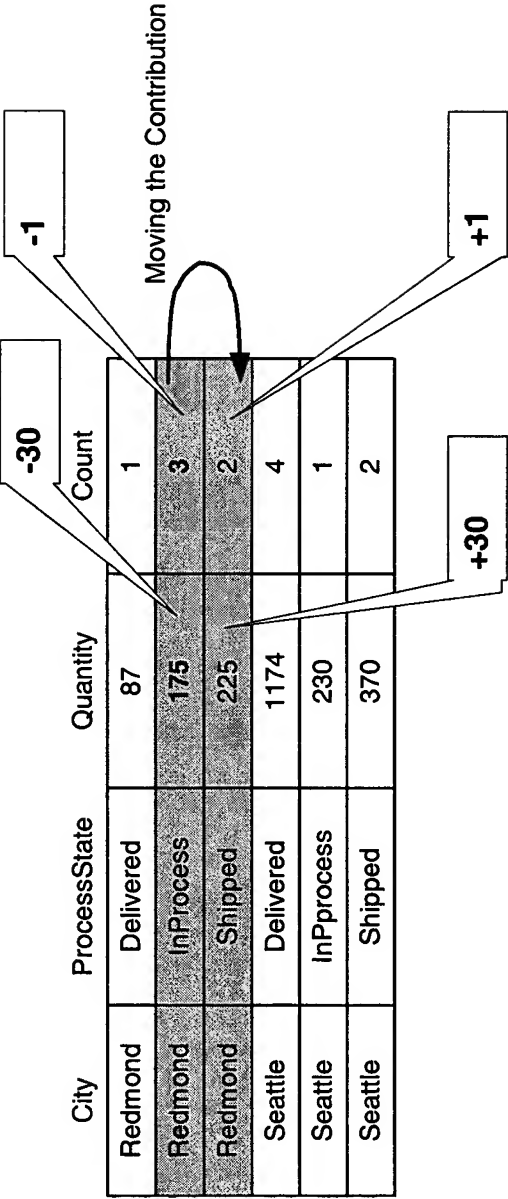


FIG. 5

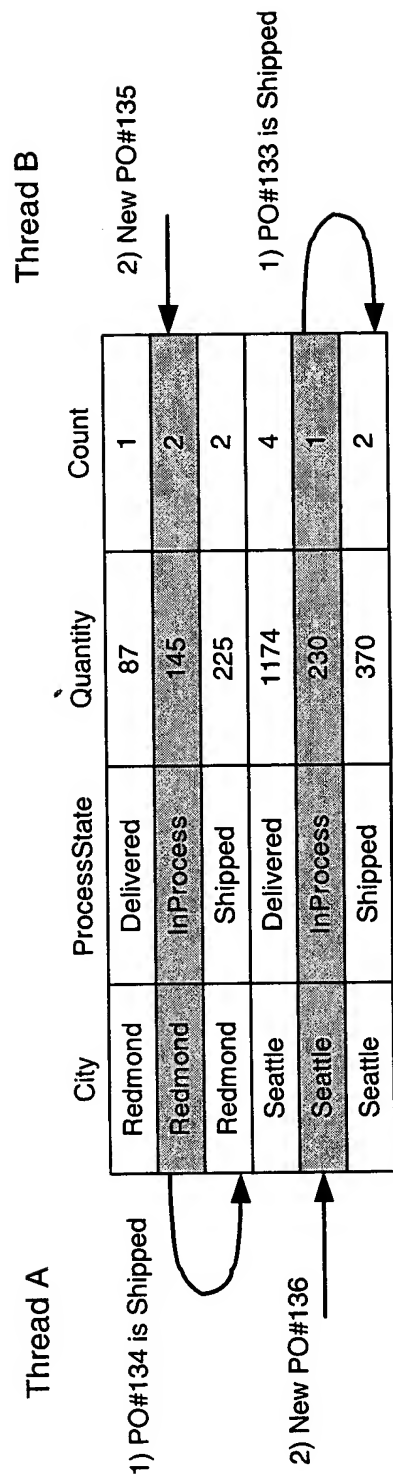


FIG. 6

Partition	City	ProcessState	Quantity	Count
0	Redmond	Delivered	87	1
		InProcess	0	0
		Shipped	200	1
	Seattle	Delivered	490	2
		InProcess	230	1
		Shipped	370	2
1	Redmond	Delivered	0	0
		InProcess	145	2
		Shipped	25	1
	Seattle	Delivered	884	2
		InProcess	0	0
		Shipped	0	0

1) PO#134 is Shipped

**Thread A**

2) New PO#136

2) New PO#135

**Thread B**

1) PO#133 is Shipped



**FIG. 7**

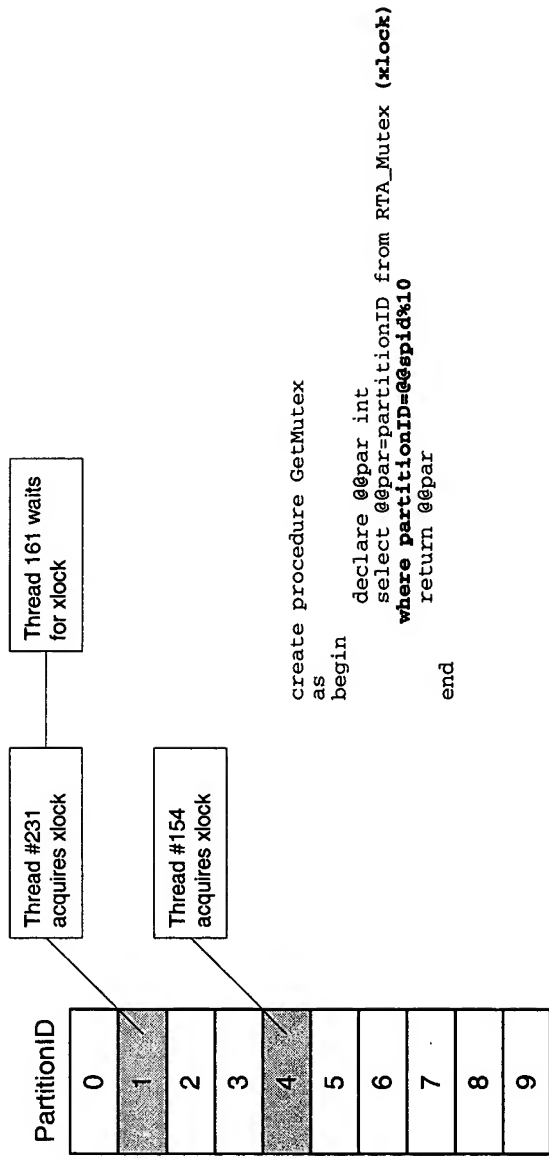
PartitionID	City	Proc ssState	Quantity	Count
0	Redmond	Delivered	...	...
0	Redmond	InProcess	...	...
0	Redmond	Shipped	...	...
0	Seattle	Delivered	...	...
0	Seattle	InProcess	...	...
0	Seattle	Shipped	...	...
1	Redmond	Delivered	...	...
1	Redmond	InProcess	...	...
1	Redmond	Shipped	...	...
1	Seattle	Delivered	...	...
1	Seattle	InProcess	...	...
1	Seattle	Shipped	...	...
2	Redmond	Delivered	...	...
2	Redmond	InProcess	...	...
2	Redmond	Shipped	...	...
2	Seattle	Delivered	...	...
2	Seattle	InProcess	...	...
2	Seattle	Shipped	...	...
3	Redmond	Delivered	...	...
3	Redmond	InProcess	...	...
...	...	...	...	...

**FIG. 8**



City	ProcessState	Quantity	Count
Redmond	Delivered	87	1
Redmond	InProcess	145	2
Redmond	Shipped	225	2
Seattle	Delivered	1174	4
Seattle	InProcess	230	1
Seattle	Shipped	370	2

**FIG. 9**



```
create table RTA_Mutex
(
    partitionID int primary key
)
insert RTA_Mutex values(0)
insert RTA_Mutex values(1)
...
insert RTA_Mutex values(9)
```

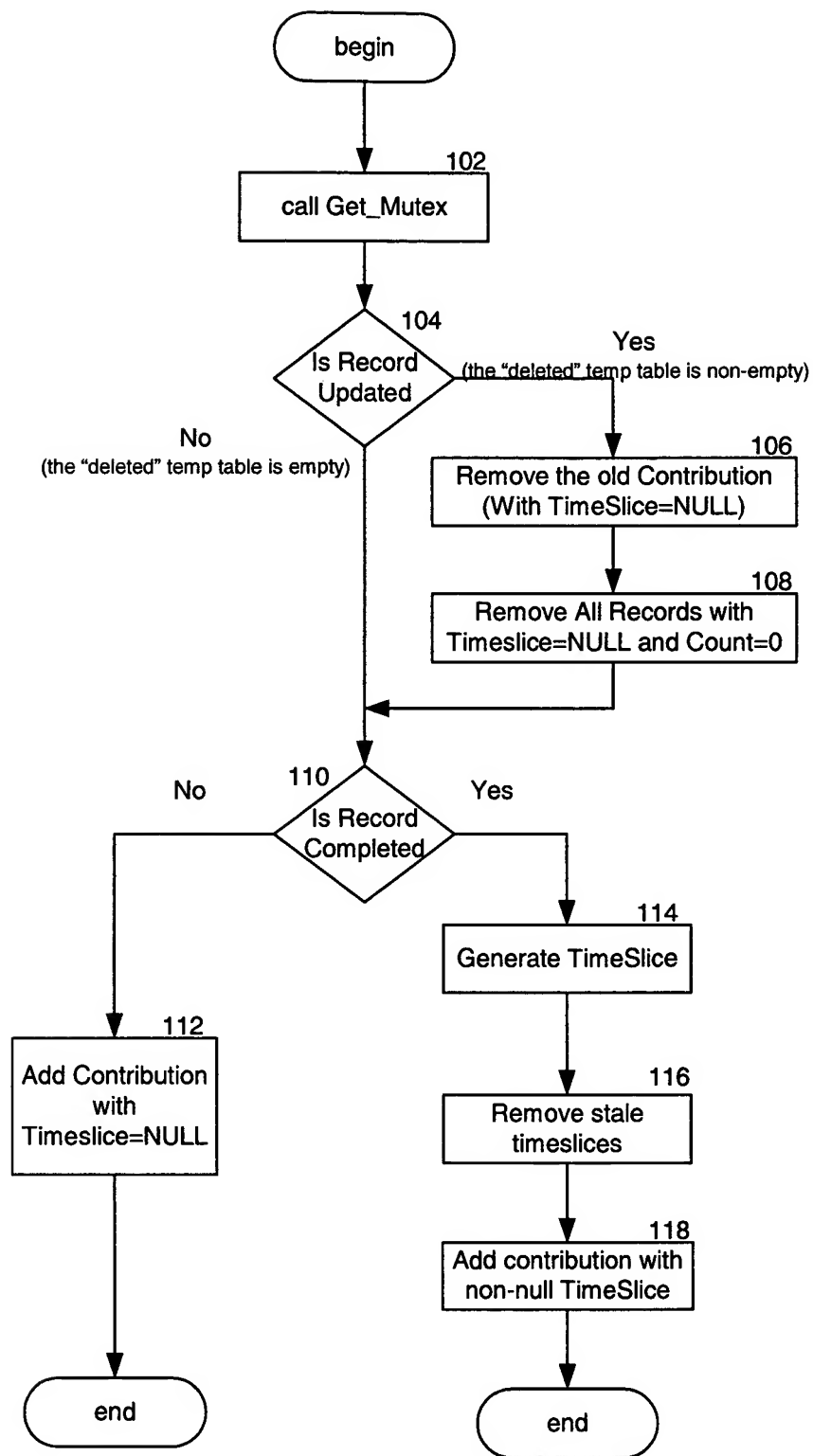
FIG. 10

Hour	City	ProcessState	Quantity	Count
8	Redmond	Delivered	87	1
		Shipped	200	1
	Seattle	Delivered	1174	4
9	Redmond	Shipped	25	1
	Seattle	Shipped	370	2
10	Redmond	InProcess	145	2
	Seattle	InProcess	230	1

FIG. 11

TimeSlice	Hour	City	ProcessState	Quantity	Count
<NULL>	8	Redmond	Shipped	200	1
		Seattle	Shipped	25	1
	9	Redmond	Shipped	370	2
		Seattle	Shipped	145	2
	10	Redmond	InProcess	230	1
		Seattle	InProcess	150	1
Jan 20, 12pm	12	Seattle	Delivered	234	1
Jan 20, 1pm	1	Seattle	Delivered	87	1
Jan 20, 2pm	2	Redmond	Delivered	790	2
Jan 20, 3pm	3	Seattle	Delivered		

FIG. 12



**FIG. 13**